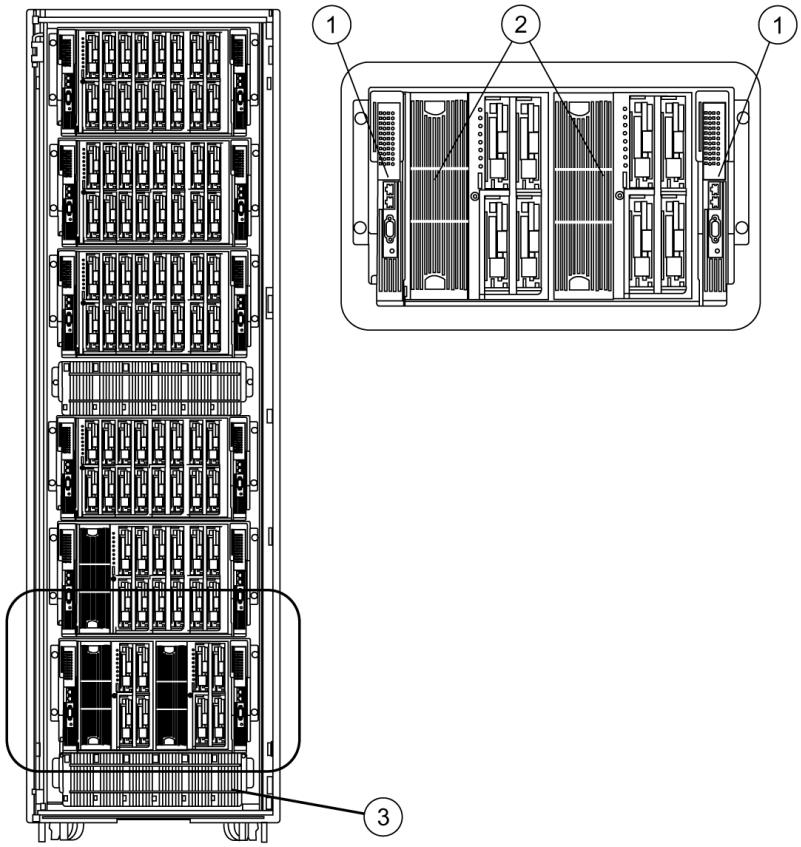
42U Rack with ProLiant BL p-Class System Installed



1. BL p-Class Interconnects (2) in BL p-Class server blade enclosure (interconnect switch shown)
2. BL40p server blades (2) in BL p-Class server blade enclosure
3. BL p-Class power enclosure with hot-plug power supplies (6)

What's New

- Intel® Xeon MP FC-PGA 2.8 GHz\2MB or 2.0 GHz\1MB processor (quad capability)
- GbE2 Interconnect Switch option for Gigabit Ethernet network adapter consolidation and future layer 3-7 and 10 Gigabit Ethernet expandability

ProLiant BL40p server blade includes:

- Intel Xeon MP FC-PGA 2.8GHz\2MB, 2.0GHz\1MB, 2.0 GHz\2MB or 1.50 GHz\1MB processor (quad capability)
- ServerWorks GC-LE Chipset
- 512-MB or 1024 MB of 2-way interleaved PC2100 ECC DDR (2 x 1 Interleaved Memory), expandable to 12 GB
- Advanced Memory Protection with Online Spare
- Five NC7781 PCI-X Gigabit NICs (embedded) standard
- One additional 10/100T NIC dedicated to Integrated Lights-Out (iLO) Management
- Smart Array 5i Plus Controller with battery-backed write cache (integrated on system board) standard on 2.8GHz/2M and 2.0GHz/2M models, optional on 1.5GHz/1M and 2.0GHz/1M models
- Wide Ultra3 SCSI Drive Cage standard supports up to four 1" hot plug hard drives
- Two PCI-X slots (64b/100MHz capable) for redundant SAN connectivity
- Integrated Lights-Out (iLO) Management (ASIC on motherboard)
- Plugs vertically into p-Class server enclosure
- Up to 12 BL40p blades fit in 42U rack

What's Needed

ProLiant BL p-Class Server Blade Enclosure:

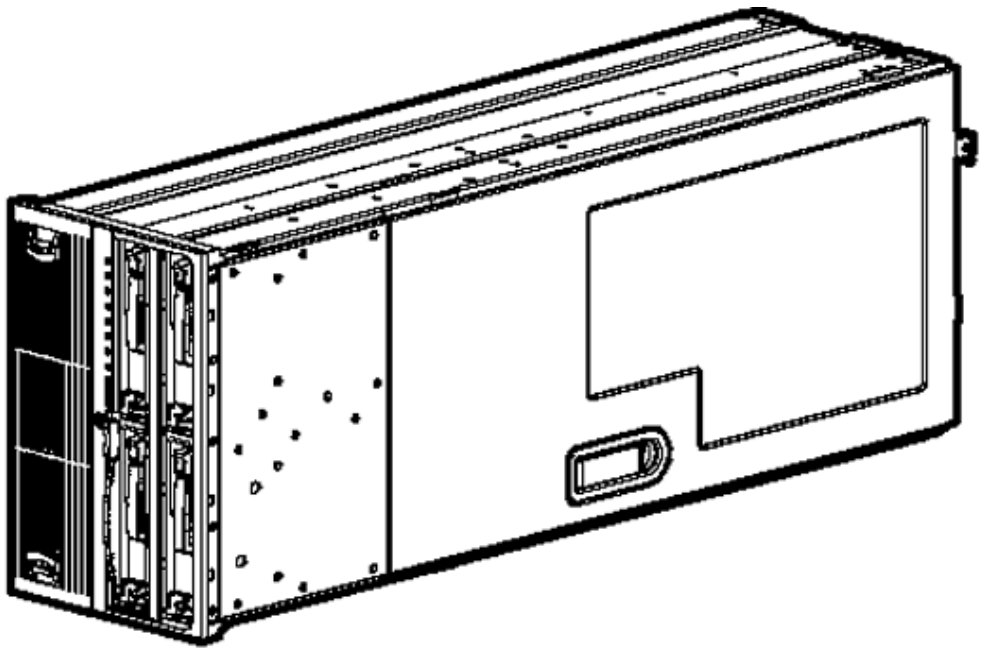
- Server blades and interconnects slide into p-Class server blade enclosures for network connection and power
- Server blade enclosure is 6U high and 10 bays across. The server blade enclosure bays consist of 2 (outer) interconnect bays and 8 server bays. One server blade enclosure can hold up to 2 ProLiant BL40p server blades and 2 interconnects
- 2 types of interconnects available:
  interconnect switches or patch panels

ProLiant BL p-Class Power Enclosure:

- Use BL p-Class sizing tool to determine power based on your configuration
  http://h30099.www3.hp.com/configurator/powercalcs.asp
  NOTE: This Web site is available in English only.
- BL p-Class power enclosure provides shared, external, redundant power
- Power enclosure is 3U high and holds up to 6 hot-plug power supplies
- Available in single-phase or three-phase power configurations
- BL p-Class power enclosure with power supplies not needed if using facility DC (-48VDC ± 10%). In this case purchase DC option kit

ProLiant BL p-Class Power Distribution:

- Distributes power from the power enclosure to the server blade enclosures
- Three power distribution choices:
  - BL p-Class scalable bus bar
  - BL p-Class mini bus bar
  - BL p-Class power bus box
- NOTE: Power requirements for a ProLiant BL p-Class system: 200V - 240V AC, 30 amp or facility DC -48V ± 10%.
- BL p-Class server blade, server blade enclosure, interconnects and power enclosure protected by a limited three year warranty with optional service uplifts available



ProLiant BL40p Server Blade

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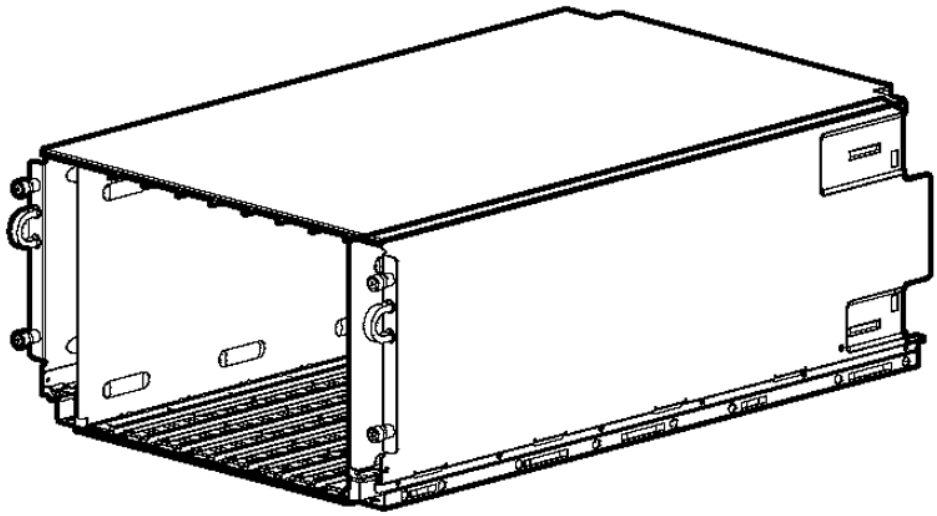

BL p-Class Server Blade Enclosure

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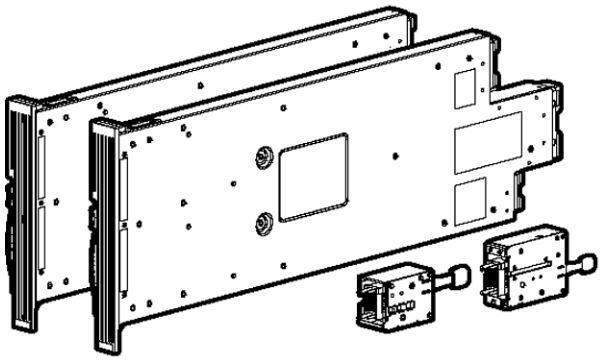

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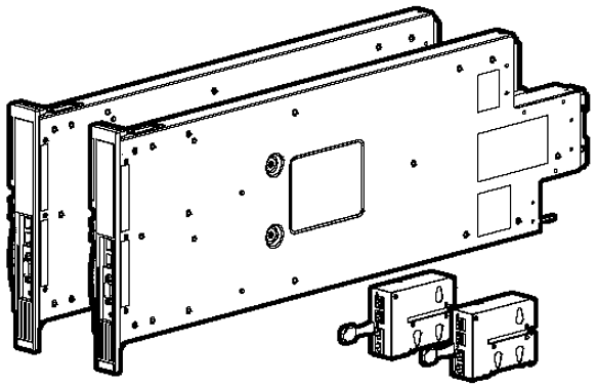

Patch Panel (shown) or Patch Panel 2

GbE Interconnect Switch
or GbE2 Interconnect Switch (fiber or copper-based)

BL p-Class Interconnects

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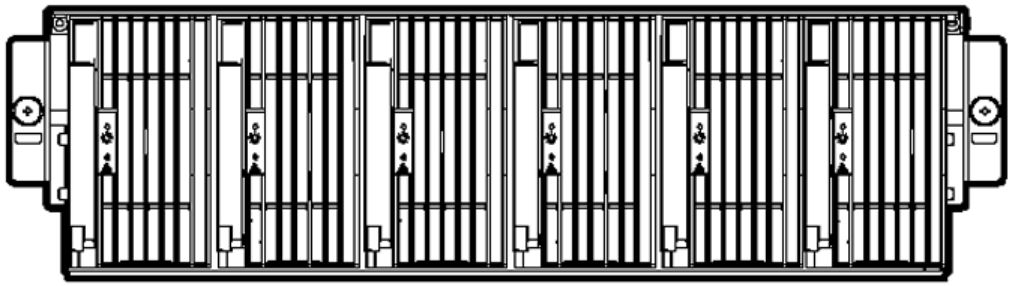

OR Facility DC

BL p-Class power enclosures and power supplies

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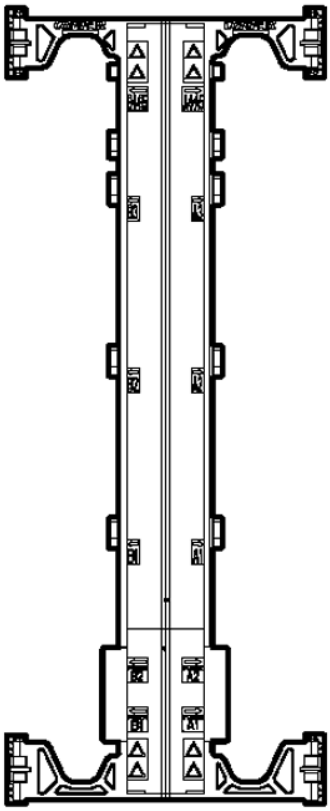
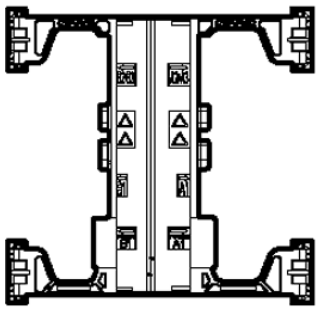
Overview



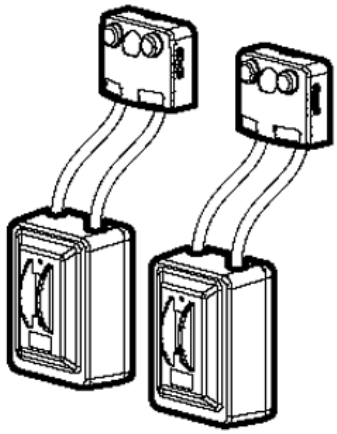
Scalable bus bar

OR



BL p-Class power distribution

OR



Bus boxes

Configuration Steps

For a complete configuration of the ProLiant BL40p, do the following:

1. Select a BL40p server blade:
   Single Xeon MP 1.5GHz processor, 512-MB RAM (2 x 256MB) (293461-B21)

   or

   Two Xeon MP 2.0 GHz processors, 1-GB RAM (2 X 512MB) (293462-B21)
   (NOTE: Additional options include processors, memory, and PCI-X HBAs.)

   PLUS
2. Decide how many BL p-Class Server Blade Enclosures to purchase (each enclosure can hold up to 2 ProLiant BL40p server blades):
   BL p-Class server blade enclosure with 8 Rapid Deployment Pack licenses (281404-B21)

   or

   BL p-Class server blade enclosure with Rapid Deployment Pack trial (243564-B21)

   PLUS
   Select an Interconnect. Interconnects are sold in pairs. One pair of Interconnects is required with each BL p-Class server blade enclosure:
   BL p-Class RJ-45 Patch panel (with 32 RJ-45 connectors) (230766-B21)

   or

   RJ-45 Patch Panel 2 with Fibre Channel pass through (required for Fibre Channel connectivity on BL20p G2 when using the patch panel interconnect) (with 32 RJ-45 connectors and 16 Fibre Channel connectors) (306465-B21)

   or

BL p-Class C-GbE Interconnect Kit (with 4 RJ-45 10/100/1000 T/TX/T and 4 RJ-45 10/100 T/TX external ports (249655-B21)

or

BL p-Class F-GbE Interconnect Kit (with 4 LC 1000 SX and 8RJ-45 10/100 T/TX external ports) (279720-B21)

PLUS

4. Select BL p-Class power enclosure and power supplies based on configuration. Use p-Class sizing tool to help determine power configuration:
   http://h30099.www3.hp.com/configurator/powercalcs.asp
   NOTE: This Web site is available in English only.
   NOTE: Power enclosures and supplies are not needed if using facility DC (-48V ± 10%).
   Single phase power enclosure with four hot-plug power supplies (239162-001) (Single-phase power enclosure holds a max of four power supplies; no need to order additional power supplies with this option kit)

   or

   Three-phase power enclosure with six hot-plug power supplies (230769-001) (Three-phase power enclosure holds a max of six power supplies no need to order additional power supplies with this option kit)
   (Power enclosures and power supplies can also be purchased separately see options list for part numbers)

   PLUS

5. Select power distribution:
   Scalable bus bar - Supports up to 5 server blade enclosures (240560-B21)

   or

   Mini bus bar – Supports up to 3 server blade enclosures (240559-B21)

   or

   Power Bus Box - connects 1 power enclosure to 1 server blade enclosure (240562-B21)

Standard Features (Server Blade)

ProLiant BL40p Server Blade

Processor *One of the following depending on Model:*	Xeon MP processor 2.8 GHz/2MB Xeon MP processor 2.0 GHz/1MB Xeon MP processor 2.0 GHz/2MB Xeon MP processor 1.50 GHz/1MB
Upgradability	Upgradable to quad processing
Cache Memory	2-MB Level 3 Cache (on the 2.0GHz Models) 1-MB Level 3 Cache (on the 1.50 GHz Models)
Chipset	ServerWorks GC-LE chipset NOTE: For more information regarding ServerWorks, please see the following URL: http://www.serverworks.com/products/overview.html. NOTE: This Web site is available in English only.
Memory	Standard 512MB of 2-way interleaved PC2100 ECC DDR (2 X 256 MB) (1 processor model) Maximum 12,288 MB Standard 1024MB of 2-way interleaved PC2100 ECC DDR (2 X 512MB) (2 processor model) Maximum 12,288 MB NOTE: Memory must be installed in pairs. Advanced Memory Protection with Online Spare.
Network Controller	Six network adapters total: Five NC7781 PCI-X Gigabit NICs (embedded) One 10/100T iLO NIC dedicated to management
Manageability	Integrated Lights-Out (iLO) Management Advanced (ASIC on the System Board)
Internal Storage	Hard Drives: None ship standard Maximum Internal Storage: 587.2 GB (internal drive cage) (4 x 146.8 GB Ultra320, 1" drives) NOTE: All U320 Universal Hard Drives are backward compatible to U2 or U3 speeds.
Expansion Slots	Two Dedicated PCI-X slots (64b/100MHz capable) for redundant SAN connectivity
Dimensions	6U high x 7" wide. Fits within p-Class Server Blade Enclosure. One BL40p takes up four (4) server blade bays within a server blade enclosure. Two BL40p server blades can fit within one server blade enclosure.

ProLiant BL p-Class Server Blade Enclosure and Interconnects

Proliant BL p-Class Server Blade Enclosure

6U (10.5-inch), 19-inch wide
Holds up to 2 ProLiant BL40p server blades; 8 ProLiant BL20p server blades; or a combination of both.
10 bays per server blade enclosure:

- 8 bays for server blades
- 2 outside bays for interconnect modules (RJ-45 patch panels or GbE interconnect switches)
  Server blades slide in and connect to the server blade enclosure back plane for power and data connections

Server blades slide in and connect to the server blade enclosure back plane for power and data connections
Up to 6 BL p-Class server blade enclosures fit in a 42U rack
Server blade management module attached to the back of each BL p-Class server blade enclosure to report all server events and provide asset and inventory information

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ProLiant BL p-Class Power Requirements

Redundant 200V - 240V AC, 30 amp single-phase
Redundant 208V 30amp 3-phase 4 wire
Redundant -48VDC ± 10%

Standard Features (Server Blade Enclosure and Interconnects)

ProLiant BL p-Class Interconnect Switch Option

Provides up to a 32 to 1 server networking cable reduction per server enclosure depending on the mix of BL20p, BL20p G2, and BL40p servers. Each interconnect switch (two per enclosure) reduces up to sixteen internal server network (NICs) ports to six external ports (four on a modular rear mounting interconnect module and two on the switch front panel). This provides a total of twelve external ports per server blade enclosure. Only one to all twelve external ports may be used per server blade enclosure.
The ProLiant BL p-Class F-GbE Interconnect Kit includes two GbE interconnect switches and two DualTSX Interconnect Modules that provide four (4) LC 1000 SX and four (4) RJ-45 10/100 T/TX uplink ports per server enclosure.
The GbE2 Interconnect Kits (C-GbE2 and F-GbE2) are for applications that require network adapter consolidation to 1000 Mbps (Gigabit Ethernet), advanced network feature support including up to layer 7 switching, BL20p G2 Fibre Channel pass-through, and 10 Gigabit Ethernet bandwidth connectivity to the network. Expandability of both layer 3-7 switching and 10 Gigabit Ethernet is supported with future GbE2 Interconnect Switch upgrade options. The optional GbE2 Storage Connectivity Kit is required for BL20p G2 Fibre Channel pass-through when using the GbE2 Interconnect Switch.

- The ProLiant BL p-Class F-GbE2 Interconnect Kit includes two GbE2 Interconnect Switches and two QuadSX Interconnect Modules that provide eight (8) LC 1000 SX and four (4) RJ-45 10/100/1000 T/TX/T external ports per server blade enclosure
- The ProLiant BL p-Class C-GbE2 Interconnect Kit includes two GbE2 Interconnect Switches and two QuadT2 Interconnect Modules that provide twelve (12) RJ-45 10/100/1000 T/TX/T external ports per server blade enclosure<

The GbE Interconnect Kits (C-GbE and F-GbE) are for applications that require network adapter consolidation to 100 Mbps (Fast Ethernet).

(Two switches per kit)
(Every BL p-Class server blade enclosure requires two interconnect switches OR two RJ-45 patch panels)

- The ProLiant BL p-Class F-GbE Interconnect Kit includes two GbE Interconnect Switches and two DualTSX Interconnect Modules that provide four (4) LC 1000 SX and eight (8) RJ-45 10/100 T/TX external ports per server blade enclosure.
- The ProLiant BL p-Class C-GbE Interconnect Kit includes two GbE Interconnect Switches and two QuadT Interconnect Modules that provide four (4) RJ-45 10/100/1000 T/TX/T and eight (8) RJ-45 10/100 T/TX external ports per server blade enclosure.

Also included (per Interconnect Switch):

- One (1) RS-232 DB-9 front panel out-of-band management port
- Redundant cross links ports connecting the two interconnect switches
- Redundant power inputs and on-board redundant fans
- Hot-plug and hot- remove with configuration retention and no need to cable/re-cable
- Power ON, management, and per port status and speed LED indicators
- Reset/power momentary push-button switch
- HP ProLiant BL Interconnect Switch Management Utilities and User Documentation CD
- Fully pre-configured for rapid deployment and immediate operation

ProLiant BL Interconnect Switch Management System and Utilities:

Full featured web-based and scriptable command line (CLI) interfaces, password protected multi-level user accounts, Telnet, SNMP, BootP client, port mirroring, port-based VLANs and VLAN tagging, EtherChannel compatible multi-port trunking, network time protocol, spanning tree protocol, broadcast/multicast storm control, flow control, human readable/writeable configuration file, TFTP client, IP address security restrictions, auto-MDI/MDIX, auto-negotiation and auto-sensing with full-duplex support, and more.

ProLiant BL p-Class RJ-45 patch panel

(Two patch panels per kit)
(Every BL p-Class server blade enclosure requires two interconnect switches OR two RJ-45 patch panels)

6U (10.5-inch), Plugs into BL p-Class 6U server blade enclosures
Used to pass NIC signals from all server blades in server blade enclosure out as RJ-45 connections
Supports Gigabit Ethernet network controllers. 16 RJ-45 connectors on the back of each BL p-Class 6U RJ-45 patch panel (32 RJ-45 connections per server blade enclosure).

Standard Features (Server Blade Enclosure and Interconnects)

Required Network Cabling	10Base-T	Categories 3, 4 or 5 UTP (100 meters) EIA/TIA-568 100-ohm STP (100 meters)
	100Base-TX	Category 5 UTP (100 meters) EIA/TIA-568 100-ohm STP (100 meters)
	1000Base-T	Category 5 UTP (100 meters) EIA/TIA-568 100-ohm STP (100 meters)
	1000Base-SX	50/125 μm Multimode Fiber, 400 MHz/Km (500 meters) 50/125 μm Multimode Fiber, 500 MHz/Km (550 meters) 62.5/125 μm Multimode Fiber, 160 MHz/Km (220 meters) 62.5/125 μm Multimode Fiber, 200 MHz/Km (275 meters)

Standard Features (Power System and Rack Information)

ProLiant BL p-Class Power System and Rack information

NOTE: To determine power configuration please refer to the ProLiant BL p-Class Overview and Planning Whitepaper and sizing tool, please see the following URL:
http://h30099.www3.hp.com/configurator/powercalcs.asp
NOTE: This Web site is available in English only.

ProLiant BL p-Class Power Enclosure

3U (5.25-inch), 19-inch wide, 29-inch deep (0.48-meter wide, 0.74-meter deep), Dual input single phase and three phase models available. BL p-Class power enclosure provides external, shared hot-plug power. Each three-phase power enclosure houses up to six hot-plug power supplies each single-phase power enclosures hold up to four hot-plug power supplies to power the BL p-Class server blades and interconnects.
Please use the sizing utility to determine the power needed for each configuration.
http://h30099.www3.hp.com/configurator/powercalcs.asp
NOTE: This Web site is available in English only.
Power enclosures and power supplies are not needed if using facility DC (-48V DC ± 10%). If using facility DC, only Facility DC Power Connection kit part number (240563-B21) is needed.

BL p-Class Power Distribution

In the ProLiant BL p-Class infrastructure, redundant -48 VDC power (from the power enclosures or facility DC power) is distributed from the power enclosures to the server blade enclosures through a bus bar system. Hinges attach the ProLiant BL bus bars to the rails in a rack. The bus bars swing open from the center to enable easy rear access to the server blades and network cables. Power is distributed redundantly through independent A- and B-sided bus bars.
Three different power distribution solutions are available depending on the maximum number of server blade enclosures planned for the rack:

- ProLiant BL p-Class scalable bus bar
- ProLiant BL p-Class mini bus bar

NOTE: To support a full 42U rack server blades (6 server blade enclosures), two mini bus bars are needed.

- ProLiant BL p-Class power bus box

	Power Enclosures Supported	Server Blade Enclosures Supported	Max. Rack Space Occupied
Scalable Bus Bar	1 or 2	= 5	36U
Mini Bus Bar	1	= 3	21U
Power Bus Bar	1	1	9U

Required Power Source

Two 30-amp redundant power feeds per power enclosure

Connectors

NEMA receptacles

1-phase	L6-30, 250v, 30A 3-wire
3-phase	L15-30, 250V, 30A, 4-wire

Optimized for power cabling from bottom and network cabling from top

ProLiant Essentials Foundation Pack Software	Optional ProLiant Essentials Value Packs	Optional software offerings that selectively extend the functionality of an Adaptive Infrastructure to address specific business problems and needs: ● Rapid Deployment Pack – an automated solution for multi-server deployment and provisioning, enabling companies to quickly and easily adapt to changing business demands. ● Workload Management Pack – provides easier management of complex environments, improving overall server utilization and enabling Windows 2000 customers for the first time to confidently deploy multiple applications on a single multiprocessor ProLiant Server. ● Integrated Lights-Out Advanced Pack - The BL40p includes the advance version of the Integrated Lights-Out which includes graphical console and virtual media
	Insight Manager 7	Insight Manager 7 helps maximize system uptime and performance and reduces the cost of maintaining the IT infrastructure by providing proactive notification of problems before those problems result in costly downtime and reduced productivity. Insight Manager 7 is easy to set up and provides rapid access to detailed fault and performance information gathered by the Management Agents. One-click-access to the Remote Insight Lights Out Edition board allows systems administrators to take full graphical control of ProLiant servers in remote locations or lights-out data centers. Finally, Insight Manager 7 in concert with the Version Control Agents and Version Control Repository Manager enables systems administrators to version manage and update system software across groups of HP ProLiant servers.
	Management Agents	The Management Agents form the foundation for HP's Intelligent Manageability strategy. They provide direct, browser-based access to in-depth instrumentation built into HP servers, workstations, desktops, and portables, and send alerts to Insight Manager 7 and other enterprise management applications in case of subsystem or environmental failures. For additional information about the Management Agents and other management products from HP, please visit the management website at http://www.hp.com/servers/manage.
	ActiveUpdate	ActiveUpdate is a web-based application that keep IT managers directly connected to HP for proactive notification and delivery of the latest software updates.
	HP ROMPaq, support software, and configuration utilities	The latest software, drivers, and firmware fully optimized and tested for your ProLiant server and options.
	Survey Utility and diagnostics utilities	The most advanced configuration analysis, reporting and troubleshooting utilities used by HP and at your fingertips.
	HP Health Driver	Health Drivers interface with the Integrated Lights-Out ASIC to provide system management support, including monitoring of server components, event logging and support for the HP Insight Management Agents.
	iLO Management Interface Driver	The iLO Management Interface Driver provides access to the iLO management processor for Insight Management Agents. This interface is used to provide SNMP alert forwarding and management agent integration. NOTE: For more information regarding ProLiant Essentials Software, please see the following URL: http://www.hp.com/servers/proliantessentials. NOTE: This Web site is available in English only.

Standard Features

OS Support

Microsoft® Windows 2000 Advanced Server
Red Hat Linux 8.0
Red Hat Enterprise Linux AS
SuSE Linux Enterprise Server 7
United Linux
Microsoft Windows Server 2003

NOTE: For a complete and up-to-date listing of supported OSs and versions, please visit our OS Support Matrix at: ftp://ftp.compaq.com/pub/products/servers/os-support-matrix-310.pdf.
NOTE: For an up-to-date listing of the latest drivers available for the HP ProLiant BL p-Class, please see: http://www5.compaq.com/products/servers/proliantbl40p/index.html.
NOTE: For a more complete and up-to-date information on Linux support, please visit HP Linux Web site at: http://h18000.www1.hp.com/products/servers/linux/hpLinuxcert.html.
NOTE: These Web sites are available in English only.

Intelligent Manageability

Integrated Lights-Out Advanced (iLO)

- Virtual Text and Graphical Remote Console *
- Virtual Floppy *
- Virtual Power Button Control
- Dedicated LAN Connectivity
- Automatic IP Configuration via DHCP/DNS/WINS
- Industry Standard 128-bit Secure Sockets Layer (SSL) Security
- IML and iLO Event Logging
- Support for 12 user accounts with customizable access privileges

Automatic Server Recovery-2 (ASR-2)
Insight Manager 7
Redundant ROM
Remote Flash ROM
ROM Based Setup Utility (RBSU)
Advanced Configuration and Power Interface Specification Ready (ACPI)
Server Health Logs
HP Redundant Power Supply Utility
Pre-Failure Warranty (covers processors, as well as hard drives and memory)
HP Interconnect Switch Management System and Utilities (interconnect switch option)
Integrated Management Log (IML)
Off-Line Backup Processor capability
Dynamic sector repairing and drive parameter tracking (with Smart Array controllers)Redundant/adaptive load balancing NIC Support
* Advanced features such as Graphical Remote Console and Virtual Floppy are included with the BL p-Class server.

Standard Features

Availability

Power redundancy: Redundant AC feeds into power enclosures, redundant DC feeds from power enclosure to server blade enclosures, 1 + 1 redundant power supplies
Four hot-plug SCSI hard drive bays and integrated RAID (Smart Array 5i Plus Controller with 64-MB total Memory on the 5i Plus Memory Module) on every server blade. Battery Backed Write Cache Enabler Module standard on the 2 processor model and optional on the 1 processor model. Redundant ROM on each server blade
ECC Memory
Interconnects Switch Availability

- Hot-plug and hot- remove with configuration retention and no need to cable/re-cable
- Two network connections per server blade bay (four NICs total) routed to two redundant interconnect switches
- Redundant inter-switch communication with two sets of redundant uplink ports per each interconnect switch
- Redundant front panel ports per each interconnect switch for diagnostics, management, and additional uplinks
- Redundant serial ports
- IEEE 802.1s (GbE2 switch) and 802.1D Spanning tree protocol support for loop-free path redundancy
- Static IEEE 802.3ad (EtherChannel compatible) trunking with automatic port load balancing and failover
- Redundant switch configuration images in memory (GbE2 switch)
- Redundant fans per each interconnect switch
- Redundant 1+1 power to each interconnect switch
- Support for ProLiant network adapter teaming
- Redundant configurable community strings and SNMP trap manager hosts
- Redundant configurable syslog server, DNS server, and default gateways (GbE2 switch)

Security

Power-on password
Administrator's password
Integrated Lights-Out has 12 customizable user accounts and SSL encryption
Integrated Lights-Out can be disabled via a Global Setting
Interconnect switch multilevel user names and passwords, management interface time out period setting, SSH*, SCP secure copy protocol*, port-based IEEE 802.1Q tagged VLANs RADIUS user authentication and authorization*, and IP address restriction

* GbE2 Interconnect Switch only

Minimum Rack Requirements

Mounts in HP Telco racks and Third Party racks that meet the following criteria:

- Compatible with 19-inch Standard EIA rail sets
- EIA rail-to-rail depth is 29 - 30"
- Cabinet depth must be at least 36-inch deep overall (Additional min. 3.5-inch clearance from rear RETMA rail to rear door, inclusive in the 36-inch overall depth)
- Ample room for top and bottom cable egress (approximately 8 square inches for full rack configuration with patch panel)
- Must be capable of supporting 1600 lb (for full rack configuration)
- Perforated front and rear doors to accommodate front-to-back cooling
- Must have 65% open perforation on server blade enclosure doors to support airflow requirements
- Optimized for use with the 10000 Series racks

NOTE: If using Compaq 7000 Series rack, Rack Extension Kit and High Air Flow Rack Door options are required.

Rack Airflow Requirements

- Rack 9000 and 10000 series Cabinets
  The increasing power of new high-performance processor technology requires increased cooling efficiency for rack-mounted servers. The 9000 and 10000 Series Racks provide enhanced airflow for maximum cooling, allowing these racks to be fully loaded with servers using the latest processors.

- Rack 7000 series Cabinets
  When installing a server with processors running at speeds of 550 MHz or greater in Rack 7000 series racks with glass doors (165753-001 (42U), and 163747-001 (22U)), the new processor technology requires the installation of High Airflow Rack Door Inserts (327281-B21 (42U), 327281-B22 (42U 6 pack), or 157847-B21 (22U)) to promote enhanced airflow for maximum cooling.

CAUTION: If a third-party rack is used, observe the following additional requirements to ensure adequate airflow and to prevent damage to the equipment:

  - Front and rear doors: If your 42U server rack includes closing front and rear doors, you must allow 830 square inches (5,350 sq cm) of hole evenly distributed from top to bottom to permit adequate airflow (equivalent to the required 64 percent open area for ventilation).
  - Side: The clearance between the installed rack component and the side panels of the rack must be a minimum of 2.75 inches (7 cm).

CAUTION: Always use blanking panels to fill all remaining empty front panel U-spaces in the rack. This arrangement ensures proper airflow. Using a rack without blanking panels results in improper cooling that can lead to thermal damage.

NOTE: For additional information, refer to the Setup and Installation Guide or the Documentation CD provided with the server, or to the server documentation located in the Support section at the following URL:
http://www5.compaq.com/products/servers/proliantbl40p/index.html.
NOTE: This Web site is available in English only.

Service and Support

HP Services provides a three-year, limited warranty, including Pre-Failure Warranty (coverage of hard drives, memory and processors) fully supported by a worldwide network of resellers and service providers. HP technical assistance is available 7x24, toll free in the United States and Canada. Telephone support services may be covered under warranty or available for an additional fee.
NOTE: Server Blade Limited Warranty includes 3 year Parts, 3 year Labor, 3-year on-site support.
NOTE: Server Blade Enclosure and Interconnects Limited Warranty includes 3 year Parts, 3 year Labor, 3-year on-site support.

A full range of Care Pack packaged hardware and software services:

- Installation and start up
- Extended coverage hours and enhanced response times
- System management and performance services
- Availability and recovery services

NOTE: For more information, customer/resellers can contact http://www.hp.com/hps/.

Please see the following URL regarding Warranty Information For Your HP Products:
http://www.compaq.com/support/warranty_upgrades/web_statements/176738.html

For additional information regarding Worldwide Limited Warranty and Technical Support, please see the following URL:
ftp://ftp.compaq.com/pub/supportinformation/ejourney/176738.pdf.
NOTE: These Web sites are available in English only.
NOTE: Certain restrictions and exclusions apply. Consult the Customer Support Center at 1-800-345-1518 for details.

Models

ProLiant BL40p P2.8-2MB, 1GB (2P) *336119-B21*	Processor(s)	(2) Xeon MP 2.8 GHz standard (up to 4 supported)
	Cache Memory	2-MB Level 3 Cache (per processor)
	Memory	1024 MB (Standard) of 2-way interleaved PC2100 ECC DDR (2 X 512 MB)
	Network Controller	Five NC7781 PCI-X Gigabit NICs (embedded) One additional 10/100T NIC dedicated to iLO Management
	Storage Controller	Smart Array 5i Plus Controller (integrated on system board) with BBWC
	Hard Drives	None ship standard
	Internal Storage	Up to 587.2 GB maximum
	Optical Drive	None
	Form Factor	6U high x 7" wide. Fits within p-Class Server Blade Enclosure
ProLiant BL40p P2.0-1MB, 512MB (1P) *336118-B21*	Processor(s)	(1) Xeon MP 2.0 GHz standard (up to 4 supported)
	Cache Memory	1-MB Level 3 Cache (per processor)
	Memory	512 MB (Standard) of 2-way interleaved PC2100 ECC DDR (2 X 256 MB)
	Network Controller	Five NC7781 PCI-X Gigabit NICs (embedded) One additional 10/100T NIC dedicated to iLO Management
	Storage Controller	Smart Array 5i Plus Controller (integrated on system board)
	Hard Drives	None ship standard
	Internal Storage	Up to 587.2 GB maximum
	Optical Drive	None
	Form Factor	6U high x 7" wide. Fits within p-Class Server Blade Enclosure
ProLiant BL40p P1.5-1MB, 512MB (1P) *293461-B21*	Processor(s)	(1) Xeon MP 1.5 GHz standard (up to 4 supported)
	Cache Memory	1-MB Level 3 Cache (per processor)
	Memory	512 MB (Standard) of 2-way interleaved PC2100 ECC DDR (2 X 256 MB)
	Network Controller	Five NC7781 PCI-X Gigabit NICs (embedded) One additional 10/100T NIC dedicated to iLO Management
	Storage Controller	Smart Array 5i Plus Controller (integrated on system board)
	Hard Drives	None ship standard
	Internal Storage	Up to 587.2 GB maximum
	Optical Drive	None
	Form Factor	6U high x 7" wide. Fits within p-Class Server Blade Enclosure
ProLiant BL40p P2.0-2MB, 1GB (2P) *293462-B21*	Processor(s)	(2) Xeon MP 2.0 GHz standard (up to 4 supported)
	Cache Memory	2-MB Level 3 Cache (per processor)
	Memory	1024 MB (Standard) of 2-way interleaved PC2100 ECC DDR (2 X 512 MB)
	Network Controller	Five NC7781 PCI-X Gigabit NICs (embedded) One additional 10/100T NIC dedicated to iLO Management
	Storage Controller	Smart Array 5i Plus Controller (integrated on system board) with BBWC
	Hard Drives	None ship standard
	Internal Storage	Up to 587.2 GB maximum
	Optical Drive	None
	Form Factor	6U high x 7" wide. Fits within p-Class Server Blade Enclosure

Options

ProLiant BL40p Unique Options	Xeon MP 2.8GHz 2M Processor Option Kit	336121-B21
	Xeon MP 2.0GHz 1M Processor Option Kit	336120-B21
	Xeon MP 1.5GHz 1M Processor Option Kit	309330-B21
	Xeon MP 2.0GHz 2M Processor Option Kit	309331-B21
	ProLiant p-Class Diagnostic Station Upgrade Kit for the BL40p	309329-B21
ProLiant Essentials Value Pack Software	Rapid Deployment Pack, 10 User, V1.x **NOTE:** This license allows 10 servers to be managed and deployed via the Deployment Server. **NOTE:** Not necessary if you purchase the server blade enclosure with 8 Rapid Deployment Pack licenses 281404-B21. **NOTE:** Rapid Deployment pack is now available in Linux only environments.	269817-B21
	Rapid Deployment Pack, 1 User, V1.x **NOTE:** This license allows 1 server to be managed and deployed via the Deployment Server. **NOTE:** Not necessary if you purchase the server blade enclosure with 8 Rapid Deployment Pack licenses 281404-B21. **NOTE:** Rapid Deployment pack is now available in Linux only environments.	267196-B21
	ProLiant Essentials Workload Management Pack (Featuring Resource Partitioning Manager version 2.0)	303284-B21
	Flexible Quantity License Kit	302127-B21
	License-Only - for use with a Master License Agreement	302128-B21
	NOTE: For more information regarding ProLiant Essentials Software, please see the following URL: http://www.compaq.com/proliantessentials. **NOTE:** Flexible and volume quantity license kits are available for ProLiant Essentials Value Packs. Refer to URL http://www.compaq.com/proliantessentials or the various ProLiant Essentials Value Pack product QuickSpecs for more information. **NOTE:** These Web sites are available in English only.	
Processor	Xeon MP 2.8GHz 2M Processor Option Kit	336121-B21
	Xeon MP 2.0GHz 1M Processor Option Kit	336120-B21
	Xeon MP 1.5GHz 1M Processor Option Kit	309330-B21
	Xeon MP 2.0GHz 2M Processor Option Kit	309331-B21
Memory (DDR DIMMs)	512MB of PC2100 ECC DDR DIMM Memory Kit (2x256MB)	300678-B21
	1024MB of PC2100 ECC DDR DIMM Memory Kit (2x512MB)	300679-B21
	2048MB of PC2100 ECC DDR DIMM Memory Kit (2x1024MB)	300680-B21
	4096MB of PC2100 ECC DDR DIMM Memory Kit (2x2048MB)	300682-B21

Options

Hard Drives	**Wide Ultra320 – Universal Hot Plug**	
	146.8-GB 10,000 rpm U320 Universal Hard Drive (1")	286716-B22
	72.8-GB 10,000 rpm U320 Universal Hard Drive (1")	286714-B22
	36.4-GB 10,000 rpm U320 Universal Hard Drive (1")	286713-B22
	72.8-GB 15,000 rpm U320 Universal Hard Drive (1")	286778-B22
	36.4-GB 15,000 rpm U320 Universal Hard Drive (1")	286776-B22
	18.2-GB 15,000 rpm U320 Universal Hard Drive (1")	286775-B22
	NOTE: All U320 Universal Hard Drives are backward compatible to U2 or U3 speeds.	
	NOTE: Please see the Hard Drive QuickSpecs for Technical Specifications such as capacity, height, width, interface, transfer rate, seek time, physical configuration, and operating temperature: U320 Hard Drive QS: http://www5.compaq.com/products/quickspecs/11531_na/11531_na.HTML	
Storage Controllers	Battery Backed Write Cache Enabler Option Kit	255514-B21
BL p-Class Server Blade Enclosures	ProLiant BL p-Class Server Blade Enclosure (ProLiant Essentials Rapid Deployment Pack Trial)	243564-B21
	ProLiant BL p-Class Server Blade Enclosure (8 ProLiant Essentials Rapid Deployment Pack Licenses)	281404-B21
BL p-Class Interconnects	ProLiant BL p-Class RJ-45 Patch Panel 2 with Fibre pass-through (pair) (required for ProLiant BL20p G2 Fibre Channel connectivity connectivity when using the patch panel interconnect) NOTE: Only one interconnect kit required per server blade enclosure.	306465-B21
	ProLiant BL p-Class RJ-45 Patch Panel (pair) NOTE: Only one interconnect kit required per server blade enclosure.	230766-B21
	ProLiant BL p-Class C-GbE2 Interconnect Kit (with pair of GbE2 Interconnect Switches and two QuadT2 Interconnect Modules) NOTE: Only one interconnect kit required per server blade enclosure.	283192-B21
	ProLiant BL p-Class F-GbE2 Interconnect Kit (with pair of GbE2 Interconnect Switches and two QuadSX Interconnect Modules) NOTE: Only one interconnect kit required per server blade enclosure.	283193-B21
	ProLiant BL p-Class C-GbE Interconnect Kit (with pair of GbE Interconnect Switches and two QuadT Interconnect Modules) NOTE: Only one interconnect kit required per server blade enclosure. NOTE: The GbE Interconnect Switch supports server NIC speeds to 100 Mbps. It is recommended that a patch panel option be used if server NIC speeds to 1000 Mbps are required. NOTE: To meet applicable radio frequency (RF) emission limits, the sidewall panels on the ends of any individual rack or a series of coupled racks and the front and rear doors must be installed in any racks containing more than one ProLiant BL p-Class GbE Interconnect Kit.	249655-B21
	ProLiant BL p-Class F-GbE Interconnect Kit (with pair of GbE Interconnect Switches and two DualTSX Interconnect Modules) NOTE: Only one interconnect kit required per server blade enclosure. NOTE: The GbE Interconnect Switch supports server NIC speeds to 100 Mbps. It is recommended that a patch panel option be used if server NIC speeds to 1000 Mbps are required. NOTE: To meet applicable radio frequency (RF) emission limits, the sidewall panels on the ends of any individual rack or a series of coupled racks and the front and rear doors must be installed in any racks containing more than one ProLiant BL p-Class GbE Interconnect Kit.	279720-B21
	ProLiant BL p-Class GbE Storage Connectivity Kit (with two Fibre Channel signal conditioning cards and two OctalFC Interconnect Modules) (required for ProLiant BL20p G2 Fibre Channel connectivity when using the GbE2 Interconnect Switch)	321745-B21

Options

BL p-Class Power options	NOTE: Use p-Class sizing tool to help determine power configuration: http://www.hp.com/products/configurator NOTE: This Web site is available in English only.	
	Single Phase Redundant Power Enclosure with 4 power supplies (Single Phase Power Enclosure holds a maximum of 4 power supplies; no need to order additional power supplies with this option kit)	239162-001
	3 Phase Redundant Power Enclosure with 6 power supplies (3 Phase Power Enclosure holds a maximum of 4 power supplies; no need to order additional power supplies with this option kit)	230769-001
	Single Phase Power Enclosure (empty) (Holds up to 4 power supplies; power supplies are not included in this kit)	231710-001
	3 Phase Power Enclosure (empty) (Holds up to 6 power supplies; power supplies are not included in this kit)	231709-001
	Single Power Supply	239161-B21
	Facility DC Power Connection	240563-B21
Power Distribution	ProLiant p-Class Scalable Bus Bar	240560-B21
	ProLiant p-Class Mini Bus Bar	240559-B21
	ProLiant p-Class Bus Power Box	240562-B21
Diagnostic Options	ProLiant p-Class Diagnostic Station NOTE: The Diagnostic Station allows access to the ProLiant p-Class server blades and the BL p-Class interconnect switches outside of the server enclosure. The option provides power and a data interface so that "offline" upgrade and diagnostic functions may be performed.	230743-B21
	ProLiant p-Class Diagnostic Station Upgrade Kit for the BL40p	309329-B21
Oher Options	ProLiant BL p-Class Enclosure Shipping Bracket Option Kit NOTE: Used to secure one server blade enclosure or one power enclosure in a rack when moving rack.	293121-B21
MSA1000	MSA1000	201723-B22
	MSA 1000 Controller	218231-B22
	MSA Fibre Channel I/O Module	218960-B21
	MSA1000 Integrated 3-port hub (NT, W2K,W2003)	286763-B21
	MSA SAN Switch 2/8	288247-B21
	FCA2101 Fibre Channel Adapter for MS operating systems	245299-B21
	FCA2214 Fibre Channel Adapter for Linux	281541-B21
	NOTE: Please see the StorageWorks Modular SAN Array 1000 QuickSpecs for additional options and configuration information at: http://www5.compaq.com/products/quickspecs/11033_na/11033_na.HTML	

Options

Cluster Options	ProLiant Cluster HA/F100 for MSA1000 v2	252408-B23
	NOTE: For additional information regarding the ProLiant Cluster for HA/F100, HA/F200 for MSA1000 please see the following QuickSpecs at: http://www5.compaq.com/products/quickspecs/11035_na/11035_na.html	
	ProLiant Cluster HA/F500 Enhanced Kit for EVA 2	254623-B23
	ProLiant Cluster HA/F500 Basic Kit for EVA 2	313047-B22
	NOTE: For additional information regarding the HP ProLiant Cluster for ProLiant Cluster HA/F500 for Enterprise Virtual Array please see the following QuickSpecs at: http://www5.compaq.com/products/quickspecs/11055_na/11055_na.html	
	ProLiant Cluster HA/F500 Basic Kit for MA8000/EMA12000/EMA16000	103250-B26
	ProLiant Cluster HA/F500 Enhanced Kit for MA8000/EMA12000/EMA16000	379937-B26
	ProLiant Cluster HA/F500 Enhanced DT Kit for MA8000/EMA12000/EMA16000	164227-B24
	NOTE: For additional information regarding the HP ProLiant Cluster for HA/F500 please see the following QuickSpecs at: http://www5.compaq.com/products/quickspecs/10232_na/10232_na.html	
StorageWorks Modular Array 8000/Enterprise Modular Array 12000	EMA12000 D14 60Hz	175990-B21
	EMA12000 S14 60Hz	175991-B21
	MA8000 60Hz	175992-B21
	EMA12000 Blue 60Hz	175993-B21
	NOTE: Options include controller, solution kits, ACS. MA8000/EMA12000 includes controller shelf, drive shelves and cabinet. Packaging upgrade to RA8000/ESA12000.	
	NOTE: Please see the StorageWorks MA8000/EMA12000 QuickSpecs for FC Hubs, FC switches, platform software, host adapters, disks and options for complete solutions at: http://www5.compaq.com/products/quickspecs/10545_na/10545_na.HTML	
StorageWorks Enterprise Modular Array 16000 FC	EMA16000 D14 60Hz (opal)	238792-B21
	EMA16000 S14 60Hz (opal)	238791-B21
	NOTE: Models include: Dual HSG80 controllers in each Model 2200 enclosure (2 pairs per single bus configuration, 4 pairs per dual bus configuration) with 1GB cache per controller pair, and 12 14-bay drive enclosures with redundant power supplies. Configure-to-Order (CTO) builds are available. Options include ACS, platform kits and software by HP.	
	NOTE: Please see the StorageWorks EMA16000 QuickSpecs for FC switches, platform software, host adapters, disks and options for complete solutions at: http://www5.compaq.com/products/quickspecs/10812_na/10812_na.HTML	
	StorageWorks Director 2/64	286809-B21
	NOTE: Please see the StorageWorks SAN Director 2/64 QuickSpecs for additional information: http://www5.compaq.com/products/quickspecs/11003_na/11003_na.HTML	

Options

HP Rack 10000 Series (Graphite Metallic)	HP S10614 (14U) Rack Cabinet - Shock Pallet	292302-B22
	HP 10647 (47U) Rack Cabinet - Pallet	245160-B21
	HP 10647 (47U) Rack Cabinet - Crated	245160-B23
	HP 10642 (42U) Rack Cabinet - Pallet	245161-B21
	HP 10642 (42U) Rack Cabinet - Shock Pallet	245161-B22
	HP 10642 (42U) Rack Cabinet - Crated	245161-B23
	HP 10636 (36U) Rack Cabinet - Pallet	245162-B21
	HP 10636 (36U) Rack Cabinet - Shock Pallet	245162-B22
	HP 10636 (36U) Rack Cabinet - Crated	245162-B23
	HP 10622 (22U) Rack Cabinet - Pallet	245163-B21
	HP 10622 (22U) Rack Cabinet - Shock Pallet	245163-B22
	HP 10622 (22U) Rack Cabinet - Crated	245163-B23
	NOTE: -B21 (pallet) used to ship empty racks shipped on a truck -B22 (shock pallet) used to ship racks with equipment installed (by custom systems, VARs and Channels) -B23 (crated) used for air shipments of empty racks NOTE: Not all HP equipment is qualified to be shipped in the Rack 10000 series.	
Compaq Rack 9000 Series (opal)	Compaq Rack 9142 (42U) – Pallet	120663-B21
	Compaq Rack 9142 (42U) – Shock Pallet	120663-B22
	Compaq Rack 9142 (42U) – Crated	120663-B23
	NOTE: –B21 (pallet) used to ship empty racks shipped on a truck –B22 (shock pallet) used to ship racks with equipment installed (by custom systems, VARs and Channels) –B23 (crated) used for air shipments of empty racks	

Options

Rack Options for HP Rack 10000 Series	Rack Blanking Panels – Graphite (Multi)	253214-B26
	NOTE: Contains one each of 1U, 2U, 4U and 8U.	
	Rack Blanking Panels – Graphite (1U)	253214-B21
	NOTE: The Rack Blanking Panels (PN 253214-B21) contains 10 each of (1U).	
	Rack Blanking Panels – Graphite (2U)	253214-B22
	NOTE: The Rack Blanking Panels (PN 253214-B22) contains 10 each of (2U).	
	Rack Blanking Panels – Graphite (3U)	253214-B23
	NOTE: The Rack Blanking Panels (PN 253214-B23) contains 10 each of (3U).	
	Rack Blanking Panels – Graphite (4U)	253214-B24
	NOTE: The Rack Blanking Panels (PN 253214-B24) contains 10 each of (4U).	
	Rack Blanking Panels – Graphite (5U)	253214-B25
	NOTE: The Rack Blanking Panels (PN 253214-B25) contains 10 each of (5U).	
	800mm Wide Stabilizer Kit (Graphite)	255488-B21
	NOTE: Supported by the Rack 10842 cabinet only.	
	600mm Stabilizer Kit – Graphite	246107-B21
	Baying Kit for Rack 10000 series (Carbon)	248929-B21
	42U Side Panel – Graphite Metallic	246099-B21
	110V Fan Kit (Graphite)	257413-B21
	NOTE: Roof Mount Includes power cord with IEC320-C13 to Nema 5-15P.	
	220V Fan Kit (Graphite)	257414-B21
	NOTE: Roof Mount Includes power cord with IEC320-C13 to Nema 6-15P.	
	36U Side Panel – Graphite Metallic	246102-B21
	47U Side Panel – Graphite Metallic	255486-B21
	9000/10000 Series Offset Baying Kit (42U)	248931-B21
	NOTE: This kit can be used to connect 9000 and 10000 series racks of the same U height together. Kit contents include hardware for connecting racks and a panel to cover the 100mm gap at the rear of the two racks.	

Options

Rack Options for Rack 9000 Series	Baying/Coupling Kit	120669-B21
	42U Side Panel NOTE: The 42U Side Panel (PN 120670-B21) supports the HP Rack 9142 and HP Rack 9842.	120670-B21
	36U Side Panel NOTE: The 36U Side Panel (PN 120671-B21) supports the HP Rack 9136.	120671-B21
	600mm Stabilizer Option Kit	120673-B21
	800mm Stabilizer Option Kit (Opal) NOTE: The 800mm Stabilizer Kit (PN 234493-B21) supports the Rack 9842 only	234493-B21
	Grounding Rack Option Kit	120682-B21
	Stabilizer Option Kit	120673-B21
	Rack Blanking Panel (Multi) NOTE: Kit includes four panels in 1U, 2U, 4U, and 8U.	169940-B21
	9142 Extension Kit NOTE: The 9142 Extension Kit (PN 120679-B21) supports the HP Rack 9142 only.	120679-B21
	Rack Blanking Panels (1U) NOTE: The Rack Blanking Panels (PN 189453-B21) contains 10 each of (1U).	189453-B21
	Rack Blanking Panels (2U) NOTE: The Rack Blanking Panels (PN 189453-B21) contains 10 each of (2U).	189453-B22
	Rack Blanking Panels (3U) NOTE: The Rack Blanking Panels (PN 189453-B21) contains 10 each of (3U).	189453-B23
	Rack Blanking Panels (4U) NOTE: The Rack Blanking Panels (PN 189453-B21) contains 10 each of (4U).	189453-B24
	Rack Blanking Panels (5U) NOTE: The Rack Blanking Panels (PN 189453-B21) contains 10 each of (5U)	189453-B25
	9136 Extension Kit	218216-B21
	9142 Short Rear Door NOTE: The 9142 Short Rear Door (PN 218217-B21) supports the HP Rack 9142 only.	218217-B21
	Split Rear Door (Opal) NOTE: The Split Rear Door (PN 254045-B21) supports the 600 mm wide, 42U 9000 series rack.	254045-B21
	9136 Short Rear Door	218218-B21
	9142 Split Rear Door	254045-B21
	9000/10000 Series Offset Baying Kit NOTE: This kit can be used to connect 9000 and 10000 series racks in 42U height together. Kit contents include hardware for connecting racks and a panel to cover the 100mm gap at the rear of the two racks.	248931-B21

Rack Options for Rack 7000 Series and Telco racks	High Air Flow Rack Door Insert for the 7122 Rack	157847-B21
	High Air Flow Rack Door Insert for the 7142 Rack (single)	327281-B21
	High Air Flow Rack Door Insert for the 7142 Rack (6-pack)	327281-B22
	Compaq Rack Extension Kit for 7142	154392-B21

Options

Rack Options for Rack 10000, 9000 and 7000 Series	Monitor Utility Shelf	303606-B21
	Ballast Option Kit	120672-B21
	100kg Sliding Shelf	234672-B21
	Rack Rail Adapter Kit (25"depth)	120675-B21
	Monitor/Utility Shelf - Graphite	253449-B21
	Depth Adjustable Fixed Rail	332558-B21
	Cable Management D-Rings Kit	168233-B21
	Console Management Controller (CMC) Option Kit	203039-B21
	Console Management Controller (CMC) Sensors Option Kit	203039-B22
	Console Management Controller (CMC) Locking Option Kit	203039-B23
	Console Management Controller (CMC) Smoke Sensor Option Kit	203039-B24
Rack Options for Telco Racks	Bus Bar Telco Rail Option Kit	245249-B21
	Enclosure Telco Rail Option Kit	266076-B21

Service and Support Offerings (HP Care Pack Services)

NOTE: HP Care Pack services cover a fully configured ProLiant BL p-Class server blade enclosure with interconnects and up to 8 BL20p server blades or 2 BL40p server blades or any combination, power enclosure with power supplies and power distribution.

Hardware Services On-site Service	
4-Hour On-site Service 5-Day x 13-Hour Coverage, 3 Years (Canadian Part Number)	FP-J23EC-36
4-Hour On-site Service, 5-Day x 13-Hour, 3 Years (U.S. Part Number)	331134-002
4-Hour On-site Service, 7-Day x 24-Hour Coverage, 3 Years (Canadian Part Number)	FP-J27EC-36
4-Hour On-site Service, 7-Day x 24-Hour Coverage, 3 Years (U.S. Part Number)	274370-002
6-Hour Call to Repair, On-site Service, 7-Day x 24-Hour Coverage, 3 Years (Canadian Part Number)	FP-J2CEC-36
6-Hour Call to Repair, On-site Service 7-Day x 24-Hour Coverage, 3 Years (U.S. Part Number)	331135-002
Installation & Start-up Services	
Hardware Installation (Canadian Part Number)	FP-J2INS-EC
Hardware Installation (U.S. Part Number)	274371-002
Provides for the Installation and Start-up of HP's Rapid Deployment Pack on a Customer supplied server designated as a Deployment Server. Includes the deployment of a single server. This new server will be deployed using either one of the pre-configured scripts or an image. In addition, the service will provide for the capture and storage of the configuration of the newly deployed server and orientation on product usage. To be delivered during standard office ours, standard office days. (U.S. Part Number)	274545-002

NOTE: For more information, customer/resellers can contact http://www.hp.com/services/carepack .

ProLiant BL40p Server Blade (2P Model)

Standard Memory

1024-MB of 2-way interleaved PC2100 ECC DDR installed (2 x 512-MB SDRAM DIMM)

Standard Memory Plus Optional Memory

Up to 9216-MB of 2-way interleaved PC2100 ECC DDR memory is available with the installation of optional DDR DIMM memory expansion kits.

Standard Memory Replaced with Optional Memory

Up to 12288-MB of 2-way interleaved PC2100 ECC DDR memory is available with the removal of standard memory and the installation of optional DDR DIMM memory expansion kits.

Memory		Slot					
		1	2	3	4	5	6
Standard	1,024MB	512 MB	512 MB	Empty	Empty	Empty	Empty
Optional	9,216MB	512 MB	512 MB	2048 MB	2048 MB	2048 MB	2048 MB
Maximum	12,288 MB	2048 MB	2048 MB	2048 MB	2048 MB	2048 MB	2048 MB

Following are memory options available from HP:

- 2512MB of PC2100 ECC DDR DIMM Memory Kit (2x256MB) 300678-B21
- 1024MB of PC2100 ECC DDR DIMM Memory Kit (2x512MB) 300679-B21
- 2048MB of PC2100 ECC DDR DIMM Memory Kit (2x1024MB) 300680-B21
- 4096MB of PC2100 ECC DDR DIMM Memory Kit (2x2048MB) 300682-B21

ProLiant BL40p Server Blade (1P Model)

Standard Memory

512MB of 2-way interleaved PC2100 ECC DDR installed (2 x 256-MB SDRAM DIMM)

Standard Memory Plus Optional Memory

Up to 8704-MB of 2-way interleaved PC2100 ECC DDR memory is available with the installation of optional DDR DIMM memory expansion kits.

Standard Memory Replaced with Optional Memory

Up to 12288-MB of 2-way interleaved PC2100 ECC DDR memory is available with the removal of standard memory and the installation of optional DDR DIMM memory expansion kits.

Memory		Slot					
		1	2	3	4	5	6
Standard	512MB	256 MB	256 MB	Empty	Empty	Empty	Empty
Optional	4,608MB	256 MB	256 MB	2048 MB	2048 MB	2048 MB	2048 MB
Maximum	12,288MB	2048 MB	2048 MB	2048 MB	2048 MB	2048 MB	2048 MB

Following are memory options available from HP:

- 512MB of PC2100 ECC DDR DIMM Memory Kit (2x256MB) 300678-B21
- 1024MB of PC2100 ECC DDR DIMM Memory Kit (2x512MB) 300679-B21
- 2048MB of PC2100 ECC DDR DIMM Memory Kit (2x1024MB) 300680-B21
- 4096MB of PC2100 ECC DDR DIMM Memory Kit (2x2048MB) 300682-B21

HP ProLiant BL p-Class Server Blade Enclosure	**Dimensions**	Height	10.5 in (26.67 cm)
		Width	17.60 in (44.70 cm)
		Depth	28.86 in (73.30 cm)
	Input Specifications	Rated input voltage	-43 VDC to -53 VDC Nominal -48 VDC
		Rated input current	62.5 A at -48 VDC
		Rated input Power	3000 W
	Individual server blade bay ratings	Rated input voltage	-43 VDC to -53 VDC Nominal -48 VDC
		Rated input current	6.25 A at -48 VDC
		Rated input Power	300 W
	Temperature range	Operating	50° to 95° F (10° to 35° C)
		Non-Operating	-22° to 140° F (-30° to 60° C)
	Relative humidity (non-condensing)	Operating	20% to 80%
		Non-Operating	5% to 95%
	Wet bulb temperature	Operating	82.4° F (28° C)
		Non-Operating	101.7° F (38.7° C)

NOTE: Operating temperature has an altitude derating of 34° F (1° C) per 1,000 ft (304.8 m). No direct sunlight. Upper operating limit is 10,000 ft (3,048 m) or 70Kpa/10.1 psia. Upper non-operating limit is 30,000 ft (9,144 m) or 30.3 KPa/4.4 psia. Storage maximum humidity of 95% is based on a maximum temperature of 113° F (45° C). Altitude maximum for storage is 70 KPa.

Operating and Performance Specifications for ProLiant BL40p Server Blade	**Dimensions**	Height		1.69 in (4.29 cm)
		Width		10.29 in (26.14 cm)
		Depth		28.00 in (71.12 cm)
	Weight (maximum)	18.0 lb (8.17 kg)		
	Temperature range	Operating		50° to 95° F (10° to 35° C)
		Non-operating		
			Shipping	-40° to 140° F (-40° to 60° C)
			Storage	-4° to 140° F (-20° to 60° C)
	Relative humidity (non-condensing)	Operating		10% to 90%
		Non-operating		
			Shipping	10% to 90%
			Storage	10% to 95%
	Maximum wet bulb temperature	82° F (28° C)		

NOTE: Operating temperature has an altitude derating of 34° F (1° C) per 1,000 ft (304.8 m). No direct sunlight. Upper operating limit is 10,000 ft (3,048 m) or 70Kpa/10.1 psia. Upper non-operating limit is 30,000 ft (9,144 m) or 30.3 KPa/4.4 psia. Storage maximum humidity of 95% is based on a maximum temperature of 113° F (45° C). Altitude maximum for storage is 70 KPa.

Operating and Performance Specifications for RJ-45 Patch panel 2 with Fibre Channel pass through	**Dimensions**	Height	10.405 in (26.43 cm)
		Width	1.535 in (3.899 cm)
		Depth	27.697 in (70.35 cm)
	Capability	IEEE 802.2, 802.3, 802.3u	
	Network Transfer Rate	10 Base-T (half-duplex)	10 Mbps
		10 Base-T (full-duplex)	20 Mbps
		100 Base-TX (half-duplex)	100 Mbps
		100 Base-TX (full-duplex)	200 Mbps
		1000 Base-TX (full-duplex)	1000 Mbps
	Connector	RJ-45	
	Cable Support	10 Base-TX	Categories 3, 4, or 5 UTP (2 or 4 pair); up to 328 ft (100 m)
		100 Base-TX	Category 5 UTP (2 pair); up to 328 ft (100 m)
		1000 Base-TX	Category 5E (4 pair); up to 328 ft (100 m)
	Power requirements	200 mA at + 5V DC; 500 mA at -48V	
	Temperature range	Operating	50° to 95° F (10° to 35° C)
		Non-operating	-22° to 140° F (-30° to 60° C)
	Relative humidity (non-condensing)	Operating	20% to 80%
		Non-operating	5% to 95%
	Wet bulb temperature	Operating	82.4° F (28° C)
		Non-operating	101.7° F (38.7° C)

NOTE: Operating temperature has an altitude derating of 34° F (1° C) per 1,000 ft (304.8 m). No direct sunlight. Upper operating limit is 10,000 ft (3,048 m) or 70Kpa/10.1 psia. Upper non-operating limit is 30,000 ft (9,144 m) or 30.3 KPa/4.4 psia. Storage maximum humidity of 95% is based on a maximum temperature of 113° F (45° C). Altitude maximum for storage is 70 KPa.

Operating and Performance Specifications for RJ-45 Patch Panel	Dimensions	Height	10.405 in (26.43 cm)
		Width	1.535 in (3.899 cm)
		Depth	27.697 in (70.35 cm)
	Capability	IEEE 802.2, 802.3, 802.3u	
	Network Transfer Rate	10 Base-T (half-duplex)	10 Mbps
		10 Base-T (full-duplex)	20 Mbps
		100 Base-TX (half-duplex)	100 Mbps
		100 Base-TX (full-duplex)	200 Mbps
		1000 Base-TX (full-duplex)	1000 Mbps
	Connector	RJ-45	
	Cable Support	10 Base-TX	Categories 3, 4, or 5 UTP (2 or 4 pair); up to 328 ft (100 m)
		100 Base-TX	Category 5 UTP (2 pair); up to 328 ft (100 m)
		1000 Base-TX	Category 5E (4 pair); up to 328 ft (100 m)
	Power requirements	200 mA at + 5V DC; 500 mA at -48V	
	Temperature range	Operating	50° to 95° F (10° to 35° C)
		Non-operating	-22° to 140° F (-30° to 60° C)
	Relative humidity (non-condensing)	Operating	20% to 80%
		Non-operating	5% to 95%
	Wet bulb temperature	Operating	82.4° F (28° C)
		Non-operating	101.7° F (38.7° C)

NOTE: Operating temperature has an altitude derating of 34° F (1° C) per 1,000 ft (304.8 m). No direct sunlight. Upper operating limit is 10,000 ft (3,048 m) or 70Kpa/10.1 psia. Upper non-operating limit is 30,000 ft (9,144 m) or 30.3 KPa/4.4 psia. Storage maximum humidity of 95% is based on a maximum temperature of 113° F (45° C). Altitude maximum for storage is 70 KPa.

Operating and Performance Specifications for GbE Interconnect Switch

Dimensions	Height	10.41 in (26.43 cm)
	Width	1.54 in (3.9 cm)
	Depth	27.7 in (70.35 cm)
Weight	11.5 lb/5.2 kg per interconnect switch	
Performance	9.6 Gbps external port bandwidth per server blade enclosure (full duplex)	
	Forwarding rate 0.15 million pps per 10/100 port, 1.5 million pps per gigabit port, (64-byte packets)	
	Non-blocking, full-wire speed for all connections	
	Auto-MDI/MDIX, auto-negotiation and auto-sensing with full-duplex support	
Forwarding Mode	Store and forward	
MAC Addresses	8,191 per interconnect switch; MAC address based filtering and MAC address packet priority configuring	
Forwarding table age time	Maximum age: 1 to 1,000,000 seconds; default: 300 seconds	
Memory	32MB Main, 6MB flash and 16MB packet buffer per interconnect switch	
Compliance	IEEE 802.3, 802.3u, 802.3ab, 802.3z, 802.1D, 802.1p, 802.3ac, 802.3ad (Static), 802.1Q, and 802.3x	
	SNMP v1 (RFC 1157) and RMON v1 (RFC 1757) groups 1, 2, 3, and 9	
	MIB-II (RFC 1213), Bridge MIB (RFC 1493), Interface Group MIB (RFC 2863), Ethernet MIB (RFC 1643), 802.1Q Extended Bridge MIB (RFC 2674), Entity MIB (RFC 2037), SNMP Trap Convention (RFC 1215), Bridge Trap (RFC 1493), Remote Monitoring Traps (RFC 1757), and HP Enterprise Switch MIBs and Environmental Traps	
	IGMP v1 (RFC 1112), IGMP v2 (RFC 2236), SNTP (RFC 1361), Telnet (RFC 854), TFTP client (RFC 783), BootP client, (RFC 2132), DHCP client, (RFC 2131) and Zmodem	
Network transfer rate	10 Base-T (half-duplex)	10 Mbps
	10 Base-T (full-duplex)	20 Mbps
	100 Base-TX (half-duplex)	100 Mbps
	100 Base-TX (full-duplex)	200 Mbps
	1000 Base-TX (half-duplex)	1000 Mbps
	1000 Base-TX (full-duplex)	2000 Mbps
	1000 Base-SX (full-duplex)	2000 Mbps
Connector	RJ-45, DB-9 (C-GbE Interconnect Kit) LC fiber, RJ-45, DB-9 (F-GbE Interconnect Kit)	
EMI	FCC Class A	
	ICES-003 Class A	
	AS/NZS 3548 Class A	
	VCCI Class A	
Safety	UL/CUL Listed Accessory	
	CE	
Power Requirements	48V: 1050 mA, 50 W maximum (per interconnect switch)	
Temperature Range	Operating	50° to 95° F (10° to 35° C)
	Non-operating	-22° to 140° F (-30° to 60° C)
Relative humidity (non-condensing)	Operating	20% to 80%
	Non-operating	5% to 95%
Wet bulb temperature	Operating	82.4° F (28° C)
	Non-operating	101.7° F (38.7° C)

NOTE: Operating temperature has an altitude derating of 34° F (1° C) per 1,000 ft (304.8 m). No direct sunlight. Upper operating limit is 10,000 ft (3,048 m) or 70Kpa/10.1 psia. Upper non-operating limit is 30,000 ft (9,144 m) or 30.3 KPa/4.4 psia. Storage maximum humidity of 95% is based on a maximum temperature of 113° F (45° C). Altitude maximum for storage is 70 KPa.

			Single-Phase Model	Three-Phase Model
Operating and Performance Specifications for Power Enclosures	Dimensions	Height	5.25 in (13.34 cm)	5.25 in (13.34 cm)
		Width	27.15 in (68.96 cm)	27.15 in (68.96 cm)
		Depth	17.60 in (44.7 cm)	17.60 in (44.7 cm)
	Weights	No hot-plug power supplies	47.5 lb (21.55 kg)	47.5 lb (21.55 kg)
		All hot-plug power supplies	99.5 lb (45.13 kg)	125.5 lb (56.93 kg)
	Input requirements	Rated input voltage	200 VAC to 240 VAC	200 VAC to 240 VAC line to line
		Rated input frequency	50 Hz to 60 Hz	50 Hz to 60 Hz
		Rated input current per side	24A	24A per phase
		Rated input power per side	5760 W	9976 W
		Power cord	1 NEMA L6-30P per side	1 NEMA L15-30 per side
	Output voltage specifications	Rated output voltage	-48.8 VDC to –54 VDC	-48.8 VDC to –54 VDC
		Rated output current	99A	170A
		Rated output power	4298 W	8310 W
		Nominal power	4158 W at 208 VAC	7202 W at 208 VAC
	Ambient temperature range (See NOTE)	Operating	50° to 95° F (10° to 35° C)	50° to 95° F (10° to 35° C)
		Shipping	-22° to 140° F (-30° to 60° C)	-22° to 140° F (-30° to 60° C)
	Relative humidity, non-condensing (See NOTE)	Operating	20% to 80%	20% to 80%
		Non-operating	5% to 95%	5% to 95%
	Wet bulb temperature	Operating	82.4° F (28° C)	82.4° F (28° C)
		Non-operating	101.7° F (38.7° C)	101.7° F (38.7° C)

NOTE: Operating temperature has an altitude derating of 34° F (1° C) per 1,000 ft (304.8 m). No direct sunlight. Upper operating limit is 10,000 ft (3,048 m) or 70Kpa/10.1 psia. Upper non-operating limit is 30,000 ft (9,144 m) or 30.3 KPa/4.4 psia. Storage maximum humidity of 95% is based on a maximum temperature of 113° F (45° C). Altitude maximum for storage is 70 KPa.

Operating and Performance Specifications for Power Distribution Devices		Power Bus Box	Mini Bus Bar	Scalable Bus Bar
	Power enclosures or facility DC feeds supported (3U each)	1	1	2
	Server blade enclosures supported (6U each)	1	3	5
	Total rack height of supported enclosures	9U	21U	36U
	Dimensions			
	Height	5.1 in (12.95 cm)	19.45 in (49.40 cm)	48.57 in (123.37 cm)
	Width	3.6 in (9.14 cm) each	19.74 in (50.14 cm)	19.74 in (50.14 cm)
	Depth	3.25 in (8.26 cm)	2.2 in (5.59 cm)	2.2 in (5.59 cm)
	Weight	3.62 lb (1.64 kg)	13.2 lb (59.9 kg)	26 lb (11.79 kg)
	Rated operating voltage	-43.2 VDC to -54 VDC	-43.2 VDC to -54 VDC	-43.2 VDC to -54 VDC
	Max total power supported	3000 W	9000 W	15,000 W
	Total max input current at minimum voltage	69.44 A at -43.2VDC	208.32 A at -43.2 VDC	347.2 A at -43.2 VDC (equivalent of 175A per feed)
	Total max input current at nominal voltage	62.5 A at -48VDC	187.5 A at -48 VDC	312.5 A at -48 VDC (equivalent of 175A per feed)
	Max current per power feed	70A	210A	210A
	Max local ambient temperature	149° F (65° C)	149° F (65° C)	149° F (65° C)

NOTE: All systems support redundant A & B feeds. Scalable bus bar supports dual A and dual B feeds.

Operating and Performance Specifications for Facility DC	**Voltage**	Nominal input voltage	-48 VDC
		Operating voltage range	-48VDC ± 10% or -43.2 VDC to -52.8 VDC
		Max Input voltage slew rate	0.5V/uS
		Redundant feed voltages* (A & B)	*A and B feeds must differ by no more than 5VDC during steady state operation
		Ripple/Noise	480 mV PARD**
		Overshoot	Must remain within regulation limits on all feeds during startup or shutdown
		Voltage transients	Must not exceed -60 VDC
	Current	Max steady state input current	62.5A per server blade enclosure installed at -48VDC
		Max steady state current per feed/total	62.5A per server blade enclosure installed at -48VDC
		Power bus boxes	70 A/70A
		Mini bus bars	210 A/210A
		Scalable bus bars	210 A/350A or equivalent of 175A per feed*
	In-rush current	Must support up to 2X the maximum operating current per server blade enclosure (125 A) for up to 1.0 mS	
	Input over-current	Customer provided fusing for facility DC feeds that protects the system from catastrophic over-current within 20 uS. Fuse should sustain all in-rush and operating currents.	
	Max Input Current Slew Rate	1A/uS	
	Max Rated Power	3000W per server blade enclosure	
	Connections and Cables	HP provided facility DC cable connection kit: • The facility DC connection kit supports the connection of up to four -48VDC, RETURN pairs and ground. The power cable assemblies consist of 1/0AWG, color-coded, flexible cable rated at 105° C, terminated with bus mating connectors at one end and unterminated at the other end. The cable length provided enables the customer to route to a fuse panel within or adjacent to the rack.	

NOTE: *All systems support redundant A and B feeds. Scalable bus bars support dual A and dual B feeds.
** Periodic and random noise (PARD). Maximum allowable peak-to-peak ripple and noise (as measured at the load on any output channel). The ripple and noise is measured over a 20 Hz to 100 MHz frequency band. A resistive load (non-electronic) is used for this measurement. Each output is by-passed to return by a 10uF tantalum capacitor with an ESR less than 100 milli-Ohms in parallel with a 0.47 uF ceramic capacitor, at the point of load. The load cable is 12 feet of twisted wire capable of carrying the current. The printed wiring board assembly is installed in its enclosure for this measurement, or the measurement leads are properly shielded with Earth grounds applied to the insert.

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